

West Nile Virus Summary for Kentucky 2005

Introduction

The Kentucky Department for Public Health (KDPH), as the lead agency, prepared for the 2005 surveillance of the West Nile virus through a cooperative initiative with the Kentucky Department of Agriculture (KDA). The KDPH granted a contract to the University of Kentucky Livestock Disease Diagnostic Center (UKLDDC) for West Nile virus testing on wild avian (birds), mosquito pools and equines (horses) and to the Murray State University Breathitt Veterinary Center (MSUBVC) for animal testing. The KDPH Division of Laboratory Services (DLS) provided IgM capture Elisa testing on human specimens, while the MSUBVC and the UKLDDC conducted polymerase chain reaction (PCR) testing on birds and mosquitoes and IgM capture Elisa on horse specimens. By the close of the year, West Nile virus activity had been documented in 9% of Kentucky's counties either in birds, horses, humans or mosquito pools.

Human Surveillance

Surveillance personnel at either the local health department or the KDPH initiated a case history investigation on all West Nile virus positive specimens reported by the DLS. Specimen samples testing positive at the DLS or the CDC were only reported. Positive samples from commercial labs had to be confirmed at the DLS or CDC. Cases were divided by clinical history into two groups, Neuroinvasive (encephalitis/meningitis) or Non-neuroinvasive (fever) disease. West Nile virus neuroinvasive and non-neuroinvasive disease are reportable to the CDC using the Arbo-Net web based reporting system. In addition, both are reportable to the state public health department using the Kentucky Electronic Public Health Record System (KEPHRS).

Five patients met the clinical definition and laboratory criteria for either West Nile virus neuroinvasive or non-neuroinvasive disease. All cases were classified as West Nile virus neuroinvasive disease. The average age for this group was 65.6 years, with 80% being over the age of 50 years. The youngest case was a 22 year old person and the oldest an 88 year old person. Sixty percent of the cases were female. There was one death attributed to West Nile neuroinvasive disease. The week of August 20, 2005 was the peak onset week. There were no reported cases of West Nile non-neuroinvasive disease in the state of Kentucky for 2005. In addition, there was one presumptively viremic blood donor (PVD) reported in Kentucky. A PVD is a person who was asymptomatic at the time of donating blood, and is considered not a true case.

Map 1

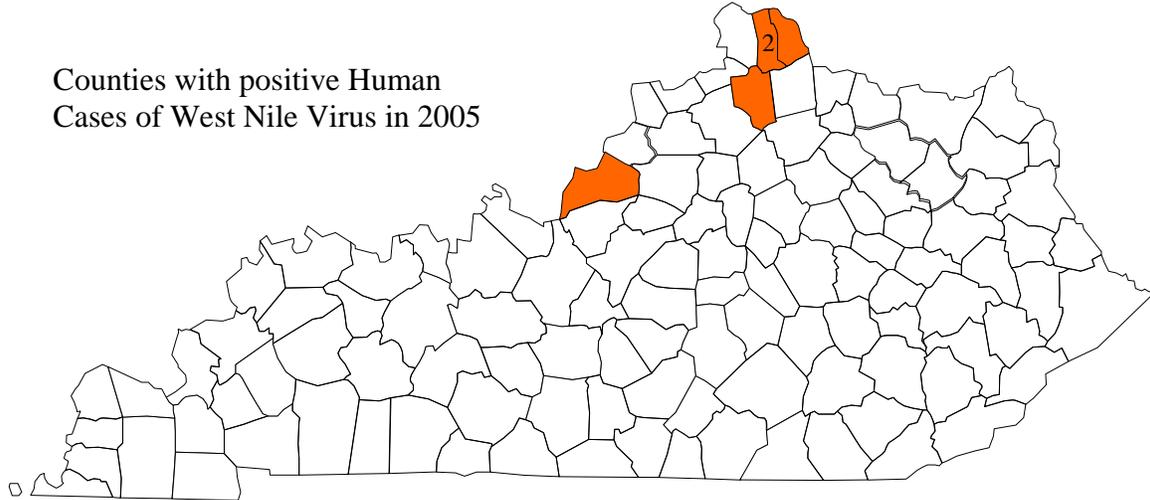


Table 1

County	Number of Pos. Humans	MMWR Week
Campbell	1	42
Grant	1	35
Jefferson	1	33
Kenton	2	36,39

Bird Surveillance

Each county was provided a pre-paid container to submit dead birds to the UKLDDC for West Nile virus testing by the KDPH. The public was encouraged to submit birds to their local health departments' environmental section for shipment to the laboratories. The health departments in the Pennyryle and Purchase Area Development District (ADD) had the option of submitting their specimens to the MSUBVC in Hopkinsville for testing. In addition, the local health department in Jefferson County undertook the responsibility to test all dead birds received from that county. Information was available on the Public Health web site about dead bird reporting and submission.

The UKLDDC and MSUBVC accepted birds throughout the year, but focused mainly during the months of late March to late September. PCR testing was done on tissue samples from the birds at the UKLDDC and the MSUBVC.

Fifty four (54) birds were submitted for testing from 22 of the 120 Kentucky counties. There were two birds positive for West Nile virus from two counties. The first positive bird was collected on July 23, 2005 from Lewis County and the other positive bird was collected on September 3, 2005 from Fayette County. The decrease in positive

birds can be attributed to many things, including the lower number of birds submitted for testing across the state, decrease in overall mosquito activity, and decreased West Nile virus activity in the region.

Map 2

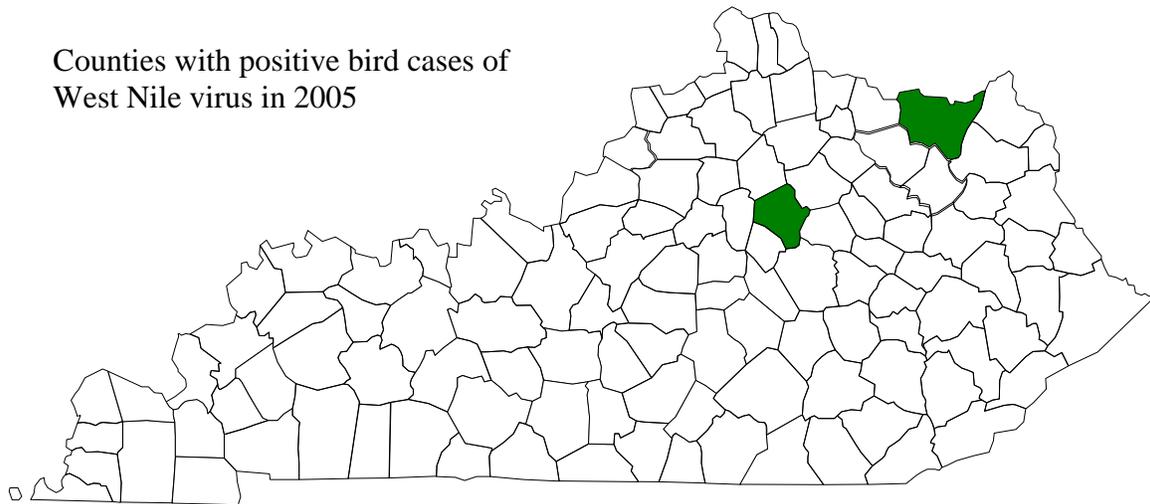


Table 2

County	Number of Pos. birds	MMWR Week
Fayette	1	35
Lewis	1	29

Mosquito Surveillance

Sixteen counties participated in mosquito sampling for West Nile virus surveillance in 2005. The number of sites varied in each county but at each site one CDC light trap and one CDC gravid trap was used. Trapping was done once a week and started the week of June 4th and last through October 8th. Approximately 15,000 mosquitoes were collected in 2005 representing all major vector species. The mosquitoes were either identified by species at LHD or shipped to the UKLDDC where a graduate student or state West Nile biologist identified the collections and separated each species into testing groups or pools. The mosquitoes were tested by PCR in pools of no more than 50 per species per site. One positive pool was collected from Fayette County in 2005. The positive pool was collected on October 1st, and contained the *Culex* species of mosquito.

Table 3

County	Number of Pos. pools	MMWR Week
Fayette Co.	1	39

Equine Surveillance

Kentucky Department of Agriculture personnel investigated all confirmed equine (horse) West Nile virus cases or cases with reported neurological disease symptoms. The KDA provided the KDPH with results on positive horses according to county of residence and onset date. The West Nile virus surveillance group then entered the data into the Arbo-Net reporting system. Nine (9) horses were found to be positive from 7 of 120 counties in Kentucky. All positive horses were unvaccinated or had not received a booster prior to positive confirmation for West Nile virus infection. The UKLDDC and MSUBVC provided PCR results on tissue samples from necropsied horses and tested serum and cerebrospinal fluid samples with IgM capture Elisa for West Nile virus. The peak week onset for horses was July 16th, 2005. The last positive horse was on October 29th, 2005. Three horses that were confirmed positive for West Nile and were euthanized, all others were reported alive and improving at time of positive confirmation for the West Nile Virus.

Map 3

Counties with positive equine cases of West Nile virus in 2005

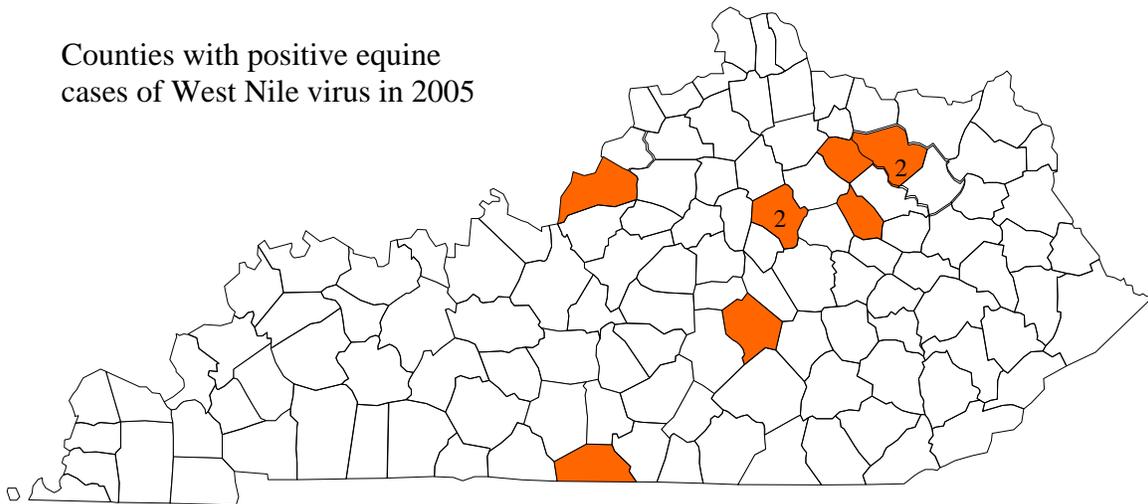


Table 4

County	Number of Pos. horses	MMWR Week
Fayette	2	37, 43
Fleming	2	35, 41
Jefferson	1	41
Lincoln	1	36
Monroe	1	28
Montgomery	1	34
Nicholas	1	34

Other Surveillance

One Chiroptera, (bat) was submitted for West Nile virus testing and was confirmed negative.

Graph: State timeline of West Nile activity during the 2005 season.

